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| Autore | Meijer Janne-Mieke |
| Titolo | Colloidal Crystals of Spheres and Cubes in Real and Reciprocal Space / / by Janne-Mieke Meijer |
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| Disciplina | 548.5 |
| Soggetti | Amorphous substances<br>Complex fluids<br>Physical chemistry<br>Materials science<br>Materials—Surfaces<br>Thin films<br>Soft and Granular Matter, Complex Fluids and Microfluidics<br>Physical Chemistry<br>Characterization and Evaluation of Materials<br>Surfaces and Interfaces, Thin Films |
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| Note generali | Description based upon print version of record. |
| Nota di bibliografia | Includes bibliographical references at the end of each chapters. |
| Nota di contenuto | Preparation and Characterization of Colloidal Crystals for Synchrotron and Free Electron Laser X-ray Studies -- Double Hexagonal Close Packed Structure Revealed in a Single Colloidal Crystal Grain by Bragg Rod Analysis -- Inducing Defects in Colloidal Crystals with Thermosensitive PNIPAM Particles -- Preparation and Characterization of Colloidal Cubes -- Self-Assembly of Colloidal Cubes via Vertical Deposition -- Experimental Evidence of Optimal Packings in Convectively Assembled Crystals of Colloidal Cubes -- Self-assembly of Colloidal Cubes Induced by Sedimentation -- Sedimentary Crystals of Magnetic Colloidal Hematite Cubes and the Influence of an External Magnetic Field. |
| Sommario/riassunto | This thesis presents an in-depth study on the effect of colloidal particle |

shape and formation mechanism on self-organization and the final crystal symmetries that can be achieved. It demonstrates how state-of-the-art X-ray diffraction techniques can be used to produce detailed characterizations of colloidal crystal structures prepared using different self-assembly techniques, and how smart systems can be used to investigate defect formation and diffusion in-situ. One of the most remarkable phenomena exhibited by concentrated suspensions of colloidal particles is the spontaneous self-organization into structures with long-range spatial and/or orientational orders. The study also reveals the subtle structural variations that arise by changing the particle shape from spherical to that of a rounded cube. In particular, the roundness of the cube corners, when combined with the self-organization pathway, convective assembly or sedimentation, was shown to influence the final crystal symmetries.